



IN-PLANT CRANE PERFORMANCE TEST

Prepared by: Bob Nourse

Date: 4/02/08

CUSTOMER: MBARI	EQUIPMENT INFORMATION: TYPE: Knuckle Boom Crane SERIAL NUMBER: 2159 MODEL NO: TK22-25	UNIT INFORMATION: VESSEL: CONTRACT:															
SYSTEM DESCRIPTION: Knuckle Boom Crane WITH 23780 LB LIFTING CAPACITY, CONTROL CONSOLE, AND ALLIED CONSTANT TENSION WINCH																	
PURPOSE OF TEST: 1.) PRE-SHIPMENT PERFORMANCE TEST OF DAVIT																	
TEST APPROVAL PERSONNEL: <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">SIGNATURE DESCRIPTION:</td> <td style="width: 30%;">NAME:</td> <td style="width: 30%;">INITIAL:</td> </tr> <tr> <td>DAVIT OPERATORS/MECHANICS:</td> <td>Jay Gathercoal</td> <td>JG</td> </tr> <tr> <td>PROJECT ENGINEER:</td> <td>Bob Nourse</td> <td>NB</td> </tr> <tr> <td>TEST SUPERVISOR:</td> <td>Larry Johnson</td> <td>LJ</td> </tr> <tr> <td>SERVICE REPRESENTATIVE:</td> <td></td> <td></td> </tr> </table>			SIGNATURE DESCRIPTION:	NAME:	INITIAL:	DAVIT OPERATORS/MECHANICS:	Jay Gathercoal	JG	PROJECT ENGINEER:	Bob Nourse	NB	TEST SUPERVISOR:	Larry Johnson	LJ	SERVICE REPRESENTATIVE:		
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TEST STAND PREPARATION NOTES: Mounted Level on Test stand. Hanging snatch Block attached to boom. FLOW METER mounted in the return line																	
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AMBIENT TEMP: F OIL TEMP: F
 CALCULATION: (DEGREES TRAVELED)/(360 DEG)*(60 SEC/MIN)/ELAPSED TIME

RIGHT TO LEFT

CYCLE	INITIAL ANGLE	FINAL ANGLE	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
1	-90	90	30.33	15	1200	0.99
2			30.1			1.00
3			30.5			0.98
AVERAGE=						0.99

LEFT TO RIGHT

CYCLE	INITIAL ANGLE	FINAL ANGLE	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
1	90	-90	27.1			1.11
2			26.5			1.13
3			26.9			1.12
AVERAGE=						1.12

PASS ~~FAIL~~

- 3.B RATED LOAD WINCH TEST-- WINCH THE LOAD UP THROUGH THE SPECIFIED RANGE AND RECORD THE TIME. The main boom should be at max angle. The Jib Should be horizontal. The Extension Should be Retracted
 RATED LOAD = 23780# REQUIRED WINCH SPEED = FT/MIN
 AMBIENT TEMP: F OIL TEMP: F
 CALCULATION: (DISTANCE TRAVELED)*(1 FT/12 INCHES)*(60 SEC/MIN)/ELAPSED TIME

WINCH UP

CYCLE	INITIAL HEIGHT	FINAL HEIGHT	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
1	0	60	13.6	12	3000	22.06
2			14.6			20.55
3			13.8			21.74
AVERAGE=						21.45

WINCH DOWN

CYCLE	INITIAL HEIGHT	FINAL HEIGHT	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
1	60	0	10.75	12	900	27.91
2			10.8			27.78
3			10.6			28.30
AVERAGE=						28.00

PASS ~~FAIL~~

- 3.c RATED LOAD Extension TEST-- Extend and Retract the Extension Boom AND RECORD THE TIME. The Jib boom should be Horizontal. The Jib Should be horizontal. The Extension Should be Retracted
 RATED LOAD = 12000# REQUIRED SPEED = none req.

		INITIAL POSITION	FINAL POSITION	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
Extend Retract		0	80	18.28	8	2000	21.88
		80	0	13.88	22	1900	28.82

- 3.D RATED LOAD Boom Up TEST-- Raise the Boom using the Boom Cylinder with the load at 6 ft radius. The Extension Should be Retracted

RATED LOAD = 23780#

REQUIRED SPEED = none req.

PASS

FAIL

4.) CONSTANT TENSION TEST

4.A DEMONSTRATE THAT THE WIRE ROPE TENSION IN C.T. MODE IS ADJUSTED TO 1000 # pull in

PASS

FAIL

Pull IN	1000
Pull OUT	2700

4.B USE A FORK-LIFT TO MOVE A 4000 Lb WEIGHT RAPIDLY UP AND DOWN IN A SIMULATED WAVE MOTION. DEMONSTRATE THAT CT-MODE CAN BE CANCELED AND THE LOAD CAN BE HOISTED UP WHILE THE FORKS ARE MOVING UP AND DOWN.

PASS

FAIL

5.) OVERLOAD TEST

.--125% OF RATED LOAD, OPERATIONAL TEST

LOAD = 29725 lbs

5.A 125% OF RATED LOAD TEST-- Start With Main Boom and Jib Horizontal, Extension Retracted. Lift The Load using the Winch. Let the load hang for 5 min, there should be no slippage or deformation.

SLEW RIGHT

PASS

FAIL

LOAD REQUIRED

29725

ACTUAL LOAD USED

29700

6.) OVERLOAD TEST

.--125% OF RATED LOAD, OPERATIONAL TEST

LOAD = 12000 x 1.25 = 15000 lbs

5.A 125% OF RATED LOAD TEST-- Start With Main Boom and Jib Horizontal, Extension extended. Lift The Load using the Winch. Let the load hang for 5 min, there should be no slippage or deformation.

SLEW RIGHT

PASS

FAIL

LOAD REQUIRED

15000

ACTUAL LOAD USED

15400

7.) NO LOAD FUNCTION PERFORMANCE TEST

WITH NO LOAD, RUN THE DAVIT AT MAX SPEED AND RECORD THE RESULTS.

AMBIENT TEMP

68 F

OIL TEMP

115 F

	INITIAL POSITION	FINAL POSITION	ELAPSED TIME	SYSTEM FLOW	SYSTEM PRESSURE	PERFORMANCE
SWING LEFT	-90	90	30.06	15	1100	1.00
SWING RIGHT	90	-90	27	15	1200	1.11
WINCH UP	0	60	9.56	15	500	31.38
WINCH DOWN	60	0	8.41	14	1400	35.67
Boom Down	0		21	22	3300	0.00
Boom Up	0	0	29.31	10	900	0.00
Jib Down	0	0	35.47	21	3300	0.00
Jib UP		0	43.66	11	500	0.00
Retract	0	80	14.1	24	2200	28.37
Extend	80	0	18.6	9	500	21.51

8.) SWING BEARING DIAL INDICATION

WITH THE Crane UNLOADED, PLACE A DIAL INDICATOR RELATIVE TO THE PEDESTAL FLANGE AND THE OUTER RACE OF THE SWING BEARING. ZERO OUT THE INDICATOR WITH THE INDICATOR UNDER THE BOOM. SWING 180 DEG AND RECORD THE DIFFERENCE

BEARING INDICATION

0.024

9.) SWING MOMENT

WITH THE DAVIT UNLOADED, Boom and jib horizontal Extension retracted. Attach Scale from Boom tip horizontal to a forklift. First with the Swing control in neutral but the power pack running pull with the forklift to 5400 lbs. The brakes must not slip. Then relax the load and pull using the swing control. Record the value on the scale

4500 psi
4000 psi

Brake Held

5400

5400

hydraulic pull

4700

4700

10.) 4000 psi verification

Set pump to 4000 psi compensator pressure, boom and Jib horizontal

AMBIENT TEMP

74 F

OIL TEMP

120 F

FINAL
POSITION

Rated load

Actual load

